

REMARKS

This is submitted in accordance with the conference with the Examiner.

During the interview the Examiner raised several questions, and applicants are willing to answer these questions in this communication.

The Examiner indicated that the term “floating” support of the rollers was not clear to him and most probably was considered by him as not accurate. The term “floatingly supported rollers” does not mean that the rollers are axially or radially movable, but instead it means that there is a “cantilevered roll bearing arrangement”. This arrangement is contrary to the two-side support, in which the bearings arranged at both sides of the rollers are provided as disclosed for example in patent document 577-112910. In Figure 2 of the German document DE-OS 16 02 153 submitted with the previous amendment, the “floating” roller support clearly shows that at the location where the rollers are inclined to a rolling product axis at an inclination angle α , there is no place for the corresponding second bearing on the other side of the roller since there it would be in the way of the rolling product. Also, when in addition to the feeding angle the roller also has an inclination angle α , then it must be formed conically and all bearings must be

arranged only on one side of the roller, which is therefore a supported "floatingly". This "cantilevered roll bearing arrangement" in accordance with the present invention makes possible the inclination angle α and thereby also the conical shape of the rollers. This situation is shown in Figure 2 of the German document DE-OS 16 02 153 and U.S. patent 4,587,820, however not in the German document GP-OS 57-112910 and U.S. patent 1 368 413 in which the two-side barrel shape rollers are provided. It is believed that these questions raised by the Examiner has been properly answered.

The Examiner indicated that the portion of the rollers in the references has a conical shape, and therefore it is necessary to more clearly distinguish the present invention from the references as to the shape of the rollers. It is respectfully submitted that the shape of the rollers can be determined when the roller is considered as a whole and not only its part. The rollers in accordance with the applicant's invention are formed as cones as a whole, while the rollers in the Japanese JP 08 57/112910 are barrel-shaped. The difference between the two shapes is clear and is properly defined. In a cone the greatest outer diameter is in the region of the base surface, while in a barrel it is located in the region of a central longitudinal portion. If the Examiner feels that it is necessary to define that the rollers are conical as a whole, applicants will be glad to do so as amended.

The Examiner further questioned the inclination angle, in addition to the feeding angle, and indicated that in his opinion there was a contradiction because on page 10, lines 19-22 it was stated that a pivoting angle could be dispensed with. It is respectfully submitted that the specification does disclose the "pivoting angle". However, the pivoting angle is a third angle in addition to the "inclination angle" and "feeding angle".

The inclination angle is an angle between the rotary axis of the roller and a longitudinal central axis of the rolling product. It can be seen from Figure 2 of the German patent document DE-OS 16 02 153 submitted with the previous amendment and identified with " α ".

The feeding angle which is identified with " β " is an angle which is located on the surface of the rolling product or on the roller and in particular where the surface of the roller contacts the rolling product. Since the roller and the rolling product are in contact or surface there is no single feeding angle but there several feeding angles β , depending on which point of the contact surface is considered. It has no importance for the present application. This is why the application disclosed generally the feeding angle β . In order to make the feeding angle β visible, in Figure 2 submitted with the previous amendment a front view in the longitudinal section was shown. An additional copy is now presented which is an additional plan view from above

only on the rolling product with the feeding angle β shown there. It is necessary for the feeding of the rolling product and therefore for the production.

The pivoting angle which is identified with " γ " cited by the Examiner can not be shown in the enclosed Figure 2. It would be visible when the side view in direction of the arrow X is considered. Then it will be possible to see that the roller support 31 and together it the roller axle 36 is turned around the axis of the intermediate gear 34 by the pivoting angle " γ ". In other words, the roller axis 36 extends not in or parallel to the plane of the drawing when one considers the Figure 2 of the German document DE OS 16 02 153, but it extends at a pivot angle γ inclined to the plane of the drawing. This position is provided in Figure 2 for the feeding angle β and the necessary for feeding of the rolling product.

In the paragraph which was cited by the Examiner, it is stated that the pivoting of the roller support 31 about the axis of the intermediate gear 34 and thereby the pivot angle β can be dispensed with, when the inventive radial distance "E" (Figure 1 of the drawings) is provided. It is respectfully submitted that the pivot angle γ and not the feeding angle β is dispensed with. In the present invention the inclination angle α and the

feeding angle β is used, while the pivot angle γ is dispensed with and replaced by the distance "E" as shown in Figure 1 of the drawings.

The important and new features of the present invention are that:

The rollers are driven correspondingly by a single drive gear 9 which engages with the sun gear 10 and surrounds the corresponding roller axis 4, and is provided with an axis-offset bevel gear toothing.

These features are defined in claim 1. They are embodied not in the use of the distance "E" but instead in the special type of the drive of the rollers, in particular in the type of the torque transmission from the sun gear to the rollers.

The German reference DE-OS 31 13 461 does not come closer to the subject matter of the present invention than the German reference DE-OS 16 02 153 which is described in the present application and analyzed in it. If Figure 2 of the reference DE-OS 16 02 153 is compared with Figure 1 of this reference, it can be seen that the planetary gear 33 of the German reference 153 is identified in the German reference 461-21 as can be seen from Figure 2, and only in the peripheral direction is arranged offset in the

rotor 4. Because of this offset the distance of the axis of the intermediate shaft 19 from the rolling product longitudinal axis in the new reference is substantially smaller than the corresponding distance of the axis of the intermediate gear 34 from the rolling product longitudinal axis in the German reference 153. Despite this in the new reference the arrangement has a plurality of planetary and intermediate gears 21, 20 and 18 including their shafts and bearings with their space consumption and their weight, and always a construction with great outer dimensions and considerable rotating masses. It has the disadvantages which were described in the present application on pages 7 and 8. The new reference does not eliminate these disadvantages and does not solve the objections of the present invention.

The German references DE-PS 38 44 802 and DE-AS 27 18 219 disclose conventional inclined roller stands, in which the inclined rollers do not planetary rotate around the rolling product. As a result, no drive problems occur in these inclined roller stands, which were mentioned in the present application and resolved by the applicant's invention. In the applicant's invention there is a drive of rollers which rotate around the rolling product and arranged on the rotor. Such a drive is not disclosed in these references. The present invention patentably distinguishes over these references. The German patent document DE-PS 597 714 is even further from the applicant's invention since it does not deal with an arrangement for

inclined rolling, but instead only with a combing roller transmission. It is unclear how the torque of the combing roller transmission is transmitted to the rollers. It is not clear whether the rollers rotate around the rolling product or only around themselves. This reference also does not teach the new features of present invention.

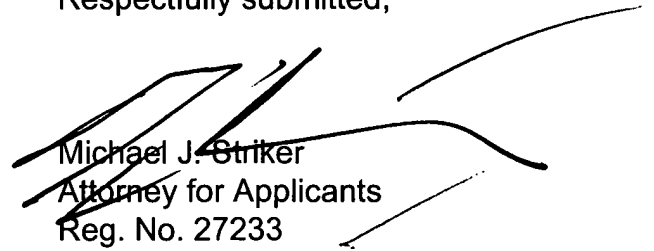
It is believed that the present invention clearly and patentably distinguishes over the prior art.

Reconsideration and allowance of present application is most respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in formal respects in order to place this case in condition for final allowance, then it is respectfully requested that such amendments or corrections be carried out by Examiner's Amendment, and the case be passed to issue. Any costs involved should be charged to the deposit account of the

undersigned (No. 19-4675). Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, he is invited to telephone the undersigned (at 212-687-5068).

Respectfully submitted,



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